

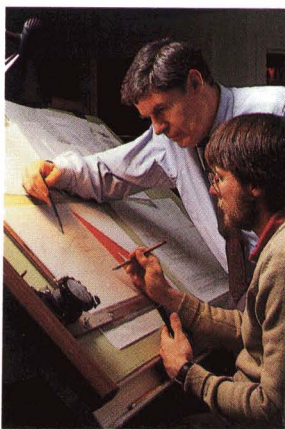


Wireless Communications

*A NASA
industry
team
adapted
Space Shuttle
technology to
local area
networking*

To eliminate entanglement of free-floating cables in the crew compartment of the Space Shuttle Orbiter, Johnson Space Center (JSC) developed a wireless infrared (IR) voice communications system in which signals are impressed on IR light beams and relayed through a series of boxes from one astronaut to another. First demonstrated on a 1988 Shuttle flight, the technology may also find application in multichannel wireless communication for mission control and other ground support operations.

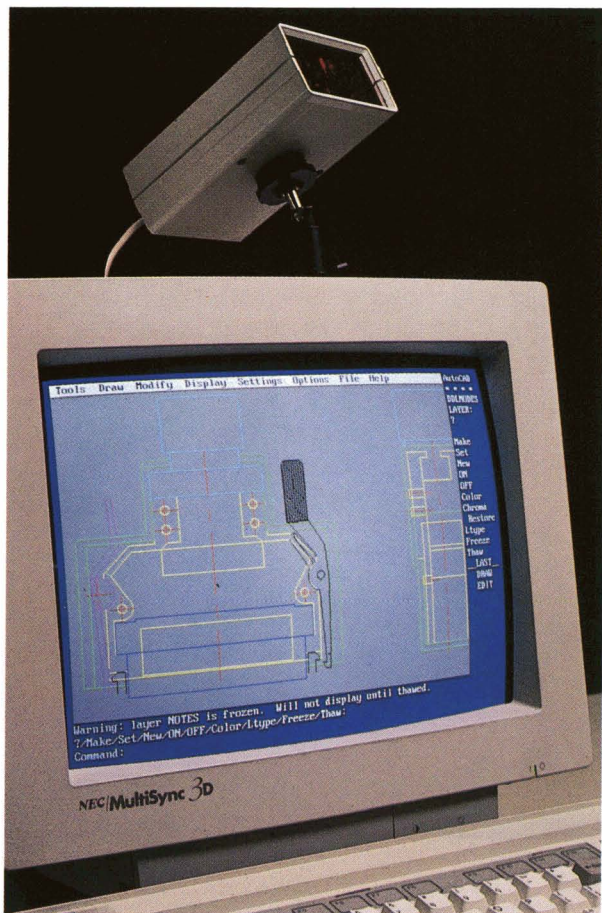
Since such a system has obvious applicability in business and industry, NASA sponsored a technology utilization project to adapt the technology to local area networking, in which large numbers of microcomputers are tied together into wireless integrated networks. The project involved a collaboration among JSC's Tracking and Communications Division; JSC's Technology Utilization Office; the NASA Technology Application Team at Research Triangle Institute (RTI), Research Triangle Park, North Carolina; and



Wilton Industries, Danbury, Connecticut.

JSC contributed its extensive systems engineering and design capability to assist in development of a commercially viable wireless infrared data acquisition system. RTI served as liaison between JSC and Wilton Industries and helped Wilton focus on a primary commercial application; Wilton brought to the project its proprietary infrared communications technology. Wilton was awarded a contract to provide engineering design and fabrication of a prototype "cable eliminator" commercial system based on JSC's wireless infrared communications technology. Now in production at Wilton Industries, the commercial derivatives that emerged from the collaboration provide the wireless equivalent of an RS232 link for industrial signal transmission and data communications applications.

The advantages of a cable-free system are evident in the industrial rule of thumb which estimates that the average cost of a foot of cable is only one dollar, but the average cost of installing or



relocating cable is \$15 a foot — and therefore connecting equipment in temporary installations (such as an industrial trade show) or installations likely to change (such as office floor plans) can be expensive. In addition, running cable is often impractical in factories, as is cable connection for data communications equipment in motion (such as portable computers).

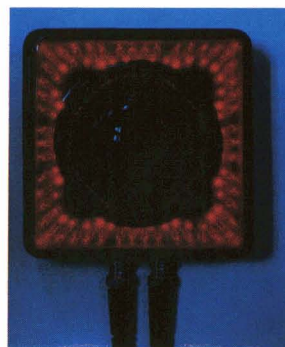
At far left, Wilton Industries president Jim Crimmins works with a product designer on a new unit for the company's IRplex Wireless RS232 Cable Eliminator line. **At left center** are some of the small and compact products of the Wilton line: clockwise from left, an IRplex 6000 hub and transceiver, an IRplex 1000 transceiver, and the IRplex 3100 unit.

A substantial number of applications require the simple wireless connection of two equipments without need for channel switching. For such installations, Wilton Industries offers the IRplex 1000 Series RS232 Cable Eliminator, which can, for example, send data to a printer 200 feet away or receive data from a remote data acquisition module. An IR transceiver can be located anywhere that is convenient because line-of-sight transmission is not necessary; the IR pattern is omnidirectional, so the unit does not have to be pointed at another unit. In the photo **above** an IRplex 1000 transceiver is mounted atop a computer terminal.

Wilton Industries provides IRplex 3000 series units for extended area coverage requiring continuous communications between two equipments as they move over a large area that may include multiple large rooms. The extended area IR system consists of mobile transceivers which move under the IR field of view of a number of ceiling mounted IR heads, or R/T Modules (**at right** is a ceiling mounted IR head for use with the IRplex 6000 system). The IRplex 6000 provides wireless local area network coverage up to 44,000 square feet and can be connected to the Ethernet, ARCNET® or Token Ring networks.

Among local area network applications for wireless IR communications cited in a survey by Transaction Marketing, Inc., Greenwich, Connecticut, are stock exchange communications between floor traders and their back offices; exposition/trade show communications; improved quality control through sampling data at loading/discharge points; telepresence location of bar-coded parts in inventories or warehouses; improved process control through expanded measurement points; emergency communications in earthquake zone buildings; and voice/data communications for "roving" workers, such as nurses, factory foremen and guards. Among Wilton Industries' initial commercial applications were instrument panel testers at the Ford Thunderbird/Cougar assembly plant in Lorain, Ohio; wireless voice communications on the trim/paint inspection lines at a number of Ford's final assembly plants; and wireless RS232 data transfer systems for substation monitoring at Florida Power and Light.

®ARCNET is a registered trademark of Datapoint Corporation.



Running cable is often impractical in factories, as is cable connection for data communications equipment in motion